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JOSEPH F. ROCK

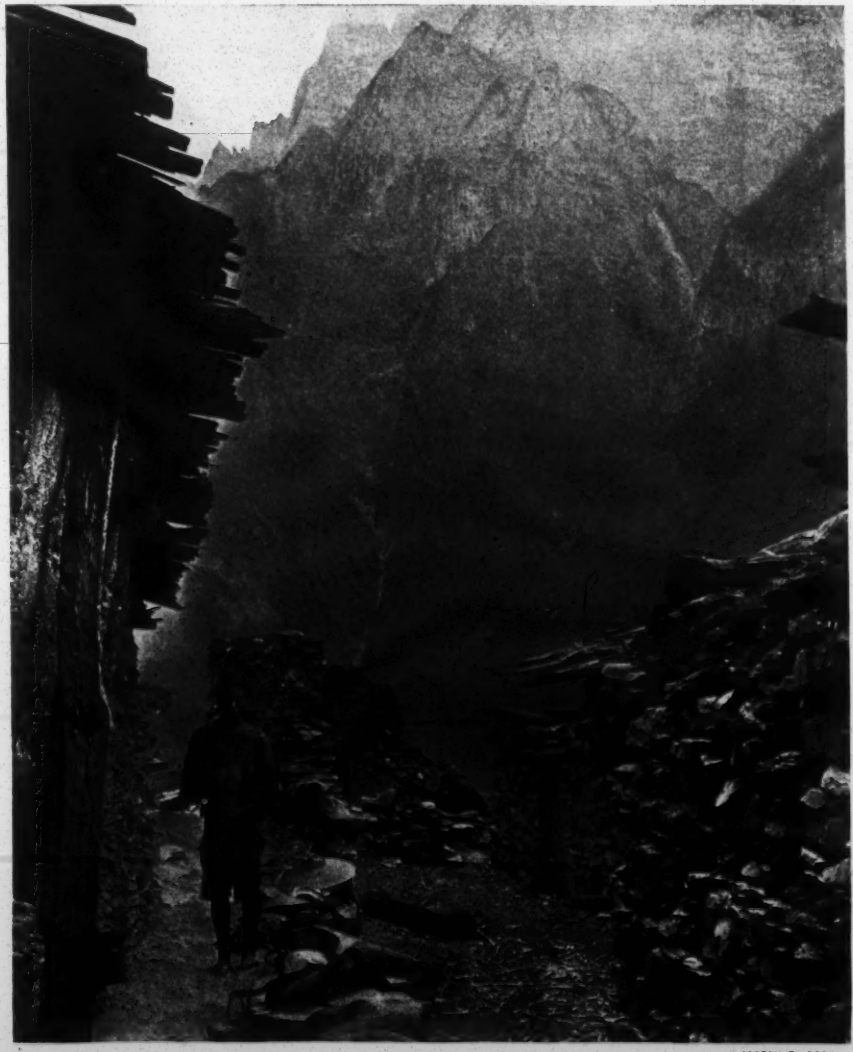
LOLO WOMEN MODEL COTTON HAT STYLES OF CHINA'S WILD WEST

In the pine woods section north of Likiang, these primitive tribespeople live in rough, nailless homes. Cane strips hold the houses up while heavy rocks hold the roof down (page 2).

among them, and their ancient historical and religious documents are carefully preserved. The National Geographic Society's library has Lolo manuscripts, dictionaries, notebooks, and other materials.

NOTE: The district inhabited by the Lolo tribes may be located on the National Geographic Society's Map of China, and the Map of India and Burma. A price list of maps may be obtained from the Society's headquarters, Washington 6, D. C.

The following issues of the *National Geographic Magazine* contain material on areas of China inhabited by the Lolos and other primitive tribes: "Climbing Mighty Minya Konka," May, 1943*; "Konka Risumgongba, Holy Mountain of the Outlaws," July, 1931*; and "Glories of the Minya Konka," October, 1930*. (*Issues marked with an asterisk are included in a special list of Magazines available to teachers in packets of ten for $1.00.*)



JOSEPH F. ROCK

FLYING "THE HUMP" MEANT CLEARING TERRAIN LIKE THIS IN THE YANGTZE GORGE; REPORTS SAY U. S. AIRMEN WHO CRASHED NEAR HERE WERE ENSLAVED BY LOLO TRIBESMEN

Slave-Keeping Lolos Lead Independent Lives

THE Lolo tribesmen of southwest China, who are reported from several sources to have captured and enslaved grounded American flyers, are a primitive people living under a strictly feudal system. A U. S. Army rescue team has been dispatched to try to ransom the airmen.

A few prewar explorers and missionaries ventured into the Lolo homeland—a wild, mountainous region shared by Tibet, northern Burma, and China. They found the Lolos divided into two main classes, the "Black Bones" and the "White Bones."

Caste System Allows Slaves to Improve Position

The Black Bones form the ruling group. They are served by the White Bones, who work their fields on a share-crop basis and are required to render military service in time of war.

A further subdivision of the White Bones consists of slaves, usually newly-captured Chinese. The slaves, severely treated at first, later are permitted the status of White Bones. The caste system, however, forbids intermarriage and further rise into the Black Bone group.

Like the unruly tribesmen of India's North-West Frontier Province, the Lolos—or Nosu—are a warlike people. Nominally under the Chinese, who have gradually pushed the aboriginal clans back into the hills, the Lolo country has long been closed to outsiders. Exceptions are a few authorized travelers and certain Chinese workers, admitted, for a fee, to collect skins, timber, minerals, and the eggs of the wax insect.

Intermittent war has gone on for centuries between the Chinese and the Lolos. In recent years the Chinese have subjugated most of the important tribes, using the "divide and conquer" technique of supporting the White Bones against their masters. The Chinese gain headway also by taking sides with individual tribes and families engaged in the bitter blood feuds characteristic of these people.

Normally, the Lolos lead simple but hard lives. Their rugged land of towering mountains and knife-edged gorges (illustration, page 3) is broken only occasionally by fertile valleys or natural pasture.

Lolo Lollipops Are Made of Salt

Men and women wear an enveloping utility mantle of heavy wool that keeps out cold and rain, and serves at night as bedding. Feminine headdress varies from floppy cloth hats (illustration, cover) to tightly-wound turbans of many layers. Men give their turbans a final hornlike twist around the sacred tuft of hair.

Even the best Lolo houses are poor, with little or no furniture. Around a central hearth the family eats its frugal meals of boiled corn and oatmeal cakes. Cakes of salt, obtained by barter, are an expensive delicacy, sucked like lollipops. Meat kept by the Lolos for future use is preserved by cutting it in strips, drying it, and pounding it to powder—a practice long antedating modern methods of food preservation.

In spite of crude ways and superstitious fears of good and bad spirits, the Lolos are considered an intelligent people. The art of writing is old

pastures below. Before cold winds and winter snows arrive the women build semipermanent huts (illustration, page 4).

Vlach herdsmen, crook in hand, lead their sheep and goats up and down the Pindus mountainsides. The women make and break camp along the way, do the chores, mind the children—and still find time to spin, weave (illustration, back cover), and knit the family's garments.

With dyed wool from their own flocks, they embroider bright designs on the blouses and vests. They also weave and embroider the billowy skirts, sashes, and jackets that serve for Sunday wear and festival occasions.

Portable tents, outdoor ovens, household goods, chickens, and children ride the pack mules and horses. Vlach children often start traveling before they can walk, and wolflike dogs that seem wild in the hills learn tamer ways in the settlements through which the procession passes.

The Pindus country is the most rugged and least populated section of Greece. With considerable average height and individual peaks of more than 8,000-foot elevation, the ranges raise a formidable barrier between west and east. The main pass is nearly a mile high.

Snow covers the higher mountains during long cold periods broken by brief interludes of warmth and color when flowers fill the upper valleys.

Heavy stands of oak, beech, chestnut, and pine blanket remote areas where lack of transport has retarded commercial forestry. Elsewhere barren red-brown surfaces, denuded even of soil and cut into tortuous, rocky ridges, make strange profiles against the deep blue of Grecian skies.

The few permanent villages of the Pindus Mountains follow the line of greatest water supply. They are spaced at points where springs gush from the hills, or rivers flow down steeply-walled valleys. Along the lower slopes, especially on the more rainy western side, are patches of wheat, olive, fig, and grape cultivation.

NOTE: The Pindus Mountains are shown on the Society's Map of Europe and the Near East.

For additional information, see "Greece—the Birthplace of Science and Free Speech," "The Greek Way," and "'The Glory That Was Greece'" (32 reproductions in full color of paintings by Herget), in the *National Geographic Magazine* for March, 1944; "Classic Greece Merges into 1941 News," January, 1941*; "Modern Odyssey in Classic Lands," March, 1940*; and "New Greece, the Centenarian, Forges Ahead," December, 1930.

See also the following GEOGRAPHIC SCHOOL BULLETINS: "Crisis in Unhappy Greece Recalls Country's Turbulent History," April 1, 1946; "Problem Areas of Europe: 8. Macedonia," February 25, 1946; "Allies in Europe: 1. Greece," January 8, 1945.

NATIONAL GEOGRAPHIC SOCIETY PREPARES FOR BRAZIL ECLIPSE

The National Geographic Society and the Army Air Forces will join in an expedition to interior Brazil to observe the total eclipse of the sun on May 20, 1947, Dr. John Oliver La Gorce, Vice President of the Society, has announced.

Representatives of the two organizations have returned from an advance trip to Brazil, where they consulted Brazilian officials and selected a site for the expedition camp near the town of Bocayuva, about 400 miles north of Rio de Janeiro.

The "grandstand" for the celestial show will be an open field on a cattle ranch. There a score of scientists will set up a portable laboratory, transported by air from the United States. They will live in a tent community while they are awaiting the climactic moment when the moon passes between the earth and the sun.

Peaceful Folk Live in Greek Battle Area

MUCH of the reported fighting between Greek government and rebel forces has centered in the Pindus Mountains, where in normal times peaceful shepherds tend their flocks, moving up and down the slopes with the seasons.

In the northern valleys of the great range that stretches southeastward from the Albanian border to the Gulf of Corinth lives a pastoral people known as Vlachs, or Kutzo-Vlachs. They speak a Romance language (based on Latin), a fact that lends credence to their claim of descent from the Romans. They call themselves Romani, a name they gave to Romania—their original homeland. In fact, the name Vlach is simply a Bulgarian version of Wallach, meaning a person from Wallachia, central province of Romania.

The Vlachs' life, based on the seasons, is nomadic. After summering in the high green hills, they drive their flocks to shelter and hay in grassy

MAYNARD OWEN WILLIAMS

VLACH WOMEN THROW TOGETHER A BRUSH HUT FOR THE WINTER

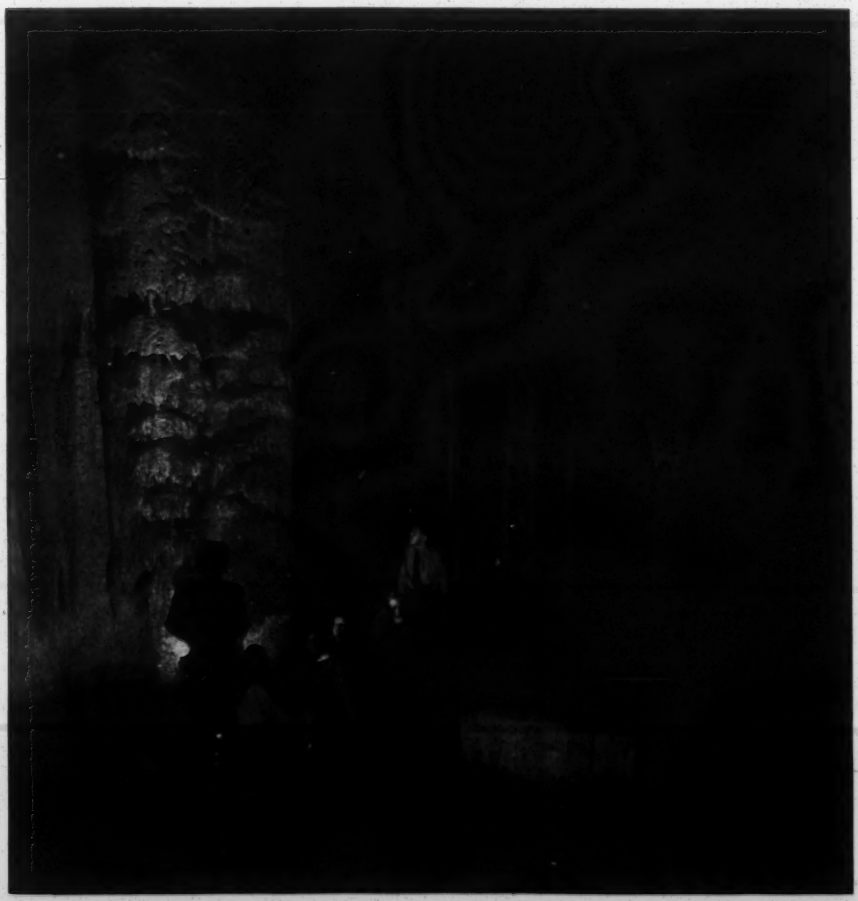
None too warm for northern Greece's winds and snows, the house is not built of more durable materials because it will be abandoned in spring when the family takes its flocks to the mountains.

A remarkable formation is Frozen Niagara, a towering mass of highly colored onyx which seemingly pours from the ceiling. Other unusual formations include Violet City, Ruins of Karnak, Washington's Pit, September Morn, Martha Washington's Statue, and Fat Man's Misery.

Not all of interest in Mammoth Cave National Park is underground. The countryside above the cavern is at its loveliest in spring, when the dogwood and redbud are in bloom, or in fall, when the leaves are turning. Nature walks enable visitors to see the many varieties of trees and shrubs and to count as many as possible of the nearly 200 species of birds.

There are housekeeping cabins on the bluffs and a hotel near the historic entrance.

NOTE: Mammoth Cave is shown on the Society's Map of the United States of America. See also "Kentucky, Boone's Great Meadow" and "The Sun Shines Bright in Kentucky" (21 color photographs), in the *National Geographic Magazine* for July, 1942*; and "A Patriotic Pilgrimage to Eastern National Parks" and "Modern Scenes in the Land of Lincoln's Birth" (15 color photographs), June, 1934.



VOLKMAR WENTZEL

"THROUGH CAVERNS MEASURELESS TO MAN, DOWN TO A SUNLESS SEA"

Coleridge's lines are no doubt recalled by boaters on Mammoth Cave's Crystal Lake. This water reaches 38 feet deep, is arched above by 94-foot-high Moonlight Dome, and lies 270 feet underground.

NATIONAL PARK SERIES: No. 3

Mammoth Cave: Wonderland Underground

THE dedication last month of Mammoth Cave as a national park added "one of the seven wonders of the new world" to the United States park system. This underground Kentucky wonderland had been under National Park Service supervision for years, but its actual dedication was delayed by the war.

Mammoth Cave is aptly named; it is so big that visitors may choose among four separate routes that are conducted daily through its subterranean corridors and chambers. These routes, complete with lights, walkways, guardrails, bridges, boat trips, and even a dining room, barely begin to cover the 150 miles of explored passageways. In turn, this explored mileage is thought to be only a fraction of the total labyrinth beneath the surface of south-central Kentucky.

A Navigable Stream Flows 360 Feet Below the Surface

Visitors driving toward the park learn that they are near the cavern area when they see circular depressions of all sizes in the bluegrass pasturelands which border the roads. These are sinkholes. They are caused by rainwater seeping into the ground and dissolving masses of limestone underneath so that the surface caves in. The funnel-shaped sinkholes then catch more water, which drains into and wears away the ever-enlarging limestone cavities below. Eventually long corridors and large chambers are formed.

A navigable stream—Echo River—flows through the fifth and lowest level of Mammoth Cave. It is 360 feet below the surface. Guides put visitors in boats to cross it. Blind fish have evolved in the eternal darkness of the cave and they swim in its waters. Crystal Lake also offers a boat ride (illustration, page 7).

The natural or historic entrance is a gaping throatlike hole that looks exactly like the mouth of a cave might be expected to look. In summer, cool drafts of air can be felt many yards away from the entrance. An artificial gateway—the Frozen Niagara entrance—has been dug, and is used by guided parties. There are also four smaller entrances.

Snowball Dining Room Has Natural Air-conditioning

The historic entrance was discovered about 1800, only a few years after Kentucky was admitted to the Union. A pioneer named Houchin, the story goes, saw a bear he had wounded disappear into the cave. Indians, of course, had known the spot for generations. In 1935 the mummified body of a prehistoric man was found on a ledge deep within Mammoth Cave. This body is inspected by thousands of visitors annually. Other mummies, as well as prehistoric tools, have also been discovered.

One of the guided tours is an all-day trip, seven and one-half miles long. In the "snowball dining room" tired trekkers have the unique pleasure of lunching 267 feet underground in a year-round constant temperature of 54 degrees. The room is named for snowball-like crystal gypsum ovals clinging to the ceiling. The glittering mineral gypsum, like wallpaper or paint, adds beauty to bare walls in all parts of the cave.

tions, which now afford distant views of windmills dotting the low-level country.

NOTE: Alkmaar is shown on the Society's Map of Central Europe and the Mediterranean.

For additional information, see "Behind Netherlands Sea Ramparts," in the *National Geographic Magazine* for February, 1940*; and "A Vacation in Holland," September, 1929*.

SCREEN TRAVELER FROM GENDREAU

NORTH HOLLAND'S TRADEMARK IS EDAM CHEESE, HERE RACKED FOR WEIGHING AT ALKMAAR

Edam, a dwindling inland port, gave the cheese its name, but near-by Alkmaar has a larger and more central market. Farmers drive loaded wagons in on Friday mornings, and close deals with buyers by "striking hands." Skillful white-clad porters carry cheeses to the Weigh House on handbarrows.

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Cheese Is Again King in Alkmaar's Market

THE cheese carriers of Alkmaar, donning their centuries-old costumes, have revived this North Holland city's distinctive industry—a healthy sign of postwar recovery in the Netherlands.

As a center of the Edam cheese trade, Alkmaar handled as much as 200,000 pounds at its Friday morning markets before World War II. The weekly scene has always been colorful, thanks to the habits of faithfully following local traditions.

Colored Hats and Barrows Indicate Guild Divisions

The costumed porters carry the cheese balls between ship, market, and Weigh House on two-man handbarrows slung from the shoulders by suspenders (illustration, page 9). They shuffle along with a rapid mincing step designed to prevent the cheeses from falling off the barrows. The spheres are systematically piled on the barrows in pyramids weighing up to 350 and 400 pounds.

In summer, the carriers wear white linen suits. Their straw hats and handbarrows are lacquered green, blue, red, or yellow. These colors indicate the guild divisions to which they belong.

This medieval guild has a club room in the old Weigh House where pewter mugs line the walls. Refreshment is provided without cost to the carriers, who hold positions in the town of poor pay but much honor.

In front of the Weigh House, once a pre-Reformation chapel, is a windy, cobbled square where the market is held. The cheeses arrive by canal barge or are brought in by blue-frocked farmers, whose carts are covered by black leather hoods and curtains, highly varnished.

City Retains Medieval Appearance

On arrival, the glossy yellow balls are tossed—often two at a time—by skillful cheese throwers, and are piled in rows. After purchase, the lots are covered with tarpaulins. Because Americans and a few other overseas customers prefer their Edams red, the cheeses intended for shipment to those countries are usually given a coating of bright red wax.

Many visitors used to time their arrival at Alkmaar with these Friday markets, but the city has other features that attract travelers. It is a characteristic Dutch town whose quaint brick buildings with their steep roofs appear much as they did centuries ago.

Two canals and many drawbridges connect narrow tree-arched streets. The old brick and gray stone church of St. Lawrence, its tower long gone, has featured Alkmaar history since the 15th century. The town hall, built at the beginning of the 16th century, contains the municipal museum of paintings and antiquities.

Alkmaar was never wholly dependent on tourist trade or the cheese market. Before the war its canning and iron industries, foundries and machine shops, and shipbuilding yards could support the population of 30,000 people.

The city's name, which means "all sea," dates back to times when the community was largely surrounded by a morass and lakes. The morass has since been drained. Parks have replaced the old wall and fortifica-

lime content and much of it is converted into feed for cattle, pigs, and chickens.

Shrimp canning had its start on the Gulf coast in 1867. About half the catch is canned. Some of the haul is ice-packed in barrels, and an increasing amount is quick-frozen.

American canned shrimp has found a market all over the world. It is very popular at home. Americans themselves eat ten times as much shrimp as lobster, and shrimp consumption is half again as great as that of crab.

NOTE: Gulf coastal waters where shrimps are found and the cities engaging in the shrimp industry may be located on the Society's Map of Mexico, Central America, and the West Indies.

For further information on the shrimp, see "The Delectable Shrimp," in the October, 1944, issue of the *National Geographic Magazine*.

THE SHRIMP STARTS ON ITS JOURNEY FROM TRAWLER TO TIN

Wriggling gray-green shrimps, about the size of a finger, and complete with head and all ten feet—which they are destined to lose in the cannery—are dumped by the basketful into the ice boat which will take them to the cannery. In the hold of the boat, they are spread between layers of crushed ice, piled tier upon tier like the chocolate in a French pastry. When the ice boat is loaded to the gunwales it will chug up the bayou to the cannery. Small trawlers like this one, which do their shrimping in waters near shore, have no room for ice. When they have a sufficient catch, they return to the ice boats which accompany them to the shrimping ground, and dump their loads. It is not more than two hours from the time a shrimp is netted in the trawl until it is iced and on its way to the cannery.

Shrimp Brings Big Industry to Louisiana

WITH meat a scarce commodity, harried shoppers pounce with enthusiasm upon cans of shrimp and other sea foods. At a time when cattle, pigs, and sheep are almost legendary animals, the shrimp is in the midst of its annual September-October season of peak catch.

Trawler crews by the thousand are dragging bays and bayous along the coast of the Gulf of Mexico for this salt-water delicacy once looked upon chiefly as a supplementary dish or a salad.

Now shrimping is big business. Hauls have totaled more than 150,000,000 pounds annually in recent years, with nine-tenths coming from the Gulf Coast. The shrimp catch is exceeded in value only by salmon, tuna, and oyster among all United States fisheries.

The Shrimp's Mysterious Disappearance Is Explained

In 1937, the discovery of an unknown chapter in the shrimp's life cycle led the way to greater hauls. A vast and virtually inexhaustible "mine" of big shrimps was found in the waters of the Gulf, a few miles off the Louisiana coast.

Scientists knew that microscopic shrimps appear in the coastal waters throughout the spring and summer. They grow to a length of as much as five inches in a few months; then, at spawning time they disappear and are not seen again. The mystery was: What becomes of the adult shrimp after spawning?

The 1937 discovery answered the riddle. Shrimps that escape the trawl in their early months move farther offshore to commit their countless eggs to the waters less than a day before hatching time. Continuing their journey seaward, they reach the shoals that are their retirement haven. There they complete their life cycle of 12 to 18 months, sometimes growing to the jumbo size of 14 inches, but never spawning again. Thus, offshore trawling for these super-size adult shrimps should not deplete future runs of young shrimp.

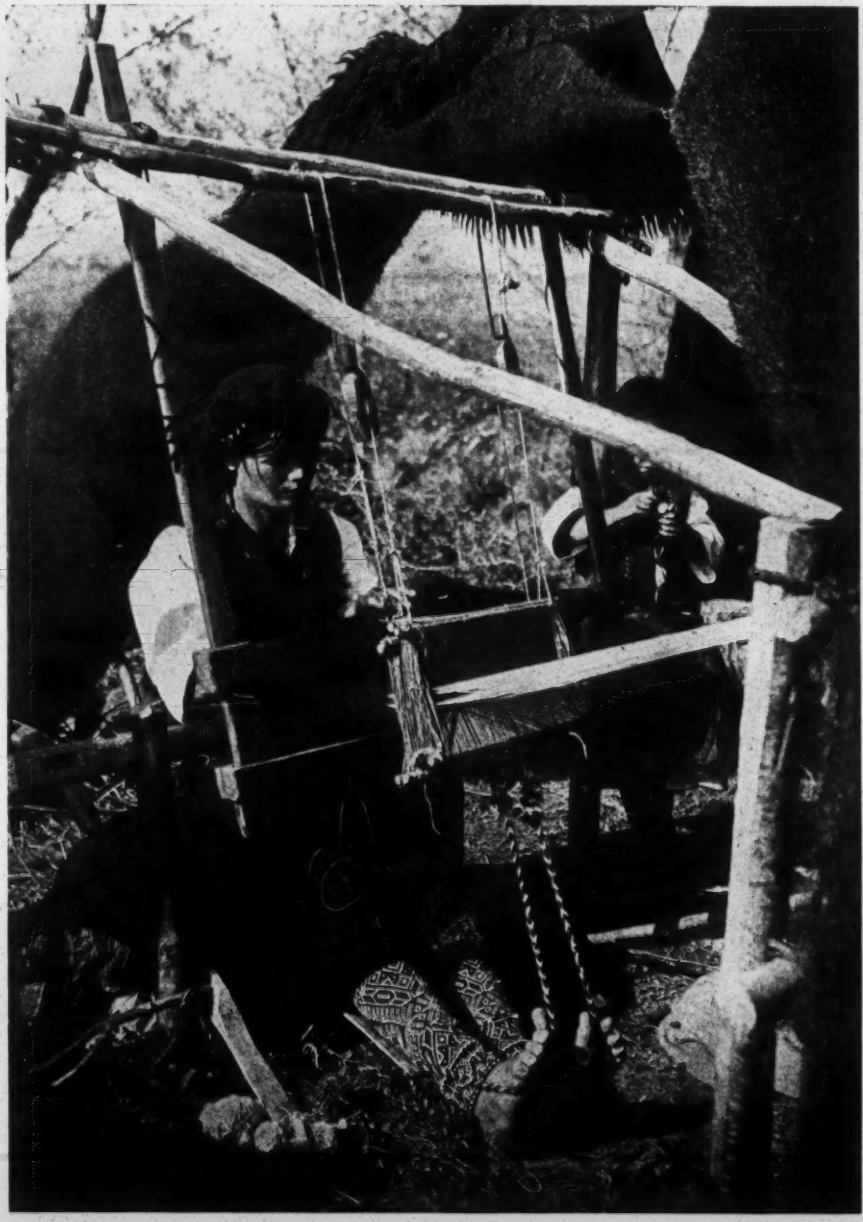
Shrimp Has a Family Resemblance to the Lobster

Shining fleets of 65-foot Diesel-powered trawlers have been built to gather the huge offshore variety. Smaller boats (illustration, page 11) harvest the bayous and inshore waters.

This discovery has boomed the two foremost shrimp towns—Morgan City and Houma—on the Gulf Intracoastal Waterway about 50 miles southwest of New Orleans. The small inshore trawlers and large offshore trawlers out of Morgan City alone now catch some 20,000,000 pounds of shrimp a year.

The commercial shrimp of Gulf and South Atlantic coast waters is the *Penaeus setiferus*. While it is alive, it is a pale greenish gray and semitransparent, looking very much like its big cousin, the lobster. Cooking turns the shrimp's complexion to a pale pink with a coral tinge and curls it into the familiar little puffy disk of the dinner table.

The shrimp lacks the large pincers of the lobster and offers no meat from head or claw. Heads and shells are removed. This waste has a high



MAYNARD OWEN WILLIAMS

THIS HOMELESS VLACH WOMAN WEAVES HOMESPUN ON A HOMEMADE LOOM

Home is where her wandering group happens to be encamped for the season. The Vlachs, millions strong, constitute Latin islands in a Grecian and Slavic sea. Their speech has definite Romance-language characteristics and words. Usually the men also understand Albanian and modern Greek. Rich Vlachs make no show of their wealth, but, like their tribal brothers, live with their animals and implements in dirty tents or makeshift huts. Hereditary leaders named Chélingas lead the tribes. A few permanent Vlach villages, or stani, dot the Pindus Mountains and other out-of-the-way areas of northern Greece where Greek government and rebel forces came to blows (page 4).